

# Work Order ID 55180

January 08, 2010 1:19:48 PM



Page 1

Item ID: D3977-1

Accept



Setup Start



Revision ID:

Item Name: Bolt

Stop



Start Date: 1/11/2010 Start Qty: 20.00



Cust Item ID:

Required Date: 1/18/2010 Req'd Qty: 20.00



Customer:

Reference:

Approvals: Process Plan: *mf*

Date: *10-01-08*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

D3977

A

100

0.00



Purchasing

Memo

0.00

Purchasing

Issue P/O: *11073*  
Purchase Part Number: 92356A662  
Supplier: McMASTER-CARR  
Certificate of conformity is required

*CL 10/01/08*

*(20)*

110

Receive & Inspect for Damage & Mat'l Certs

0.00



Packaging

Memo

0.00

Packaging

*10/01/12*

*(20)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Work Order ID 55180

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Page 2

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

120



QC

Quality Control

QC6- Inspect dimensions to drawing

0.00

Memo

=> 8/10/19

0.00

PTO ->

route  
(x20)

130



Small Fab

Small Fab

Memo

DRILL HOLE AS PER DWG

0.00

0.00

NA 10/01/26

20 /

140



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

=> 8/10/19/26

count  
(x20)

/

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3977-1 PAR #: \_\_\_\_\_ Fault Category: Supplier NCR: Yes ☒ No ☐ DQA: ✓ Date: 10-01-28  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR: <u>55180</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
<u>10.01.19</u>	<u>120</u>	<u>BOLTS DIFFER FROM DWG PER ATTACHED EMAILS.</u>	<u>10.01.19</u> <u>Q51042</u>	<u>ACCEPTABLE DEVIATION PER ATTACHED EMAIL.</u>	<u>N/A</u>	<u>S</u> <u>10/01/19</u>	<u>10.01.19</u> <u>Q51042</u>	<u>S</u> <u>10/01/19</u>

NOTE: Date & initial all entries

# Work Order ID 55180

January 08, 2010 1:19:48 PM



Page 3

Item ID: D3977-1

Accept



Setup Start



Revision ID:

Item Name: Bolt

Stop



Start Date: 1/11/2010 Start Qty: 20.00



Cust Item ID:

Required Date: 1/18/2010 Req'd Qty: 20.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

150

Identify as per dwg & Stock Location: 105

0.00



Packaging

Memo

0.00

Packaging

10-1-27 200 SP

160

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/01/27 MF  
10-1-27

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

January 08, 2010 1:19:47 PM

Page 1

Work Order ID: 55180



Parent Item: D3977-1



Parent Item Name: Bolt



Comments: IPP RevA: New issue DD verified by:EC

Start Date: 1/11/2010

Required Date: 1/18/2010

Start Qty: 20.00

Required Qty: 20.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
92356A662		Purchased	No			110	Each	0.0000	20.0000			
												
Bolt												

10-11-27 SLP

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

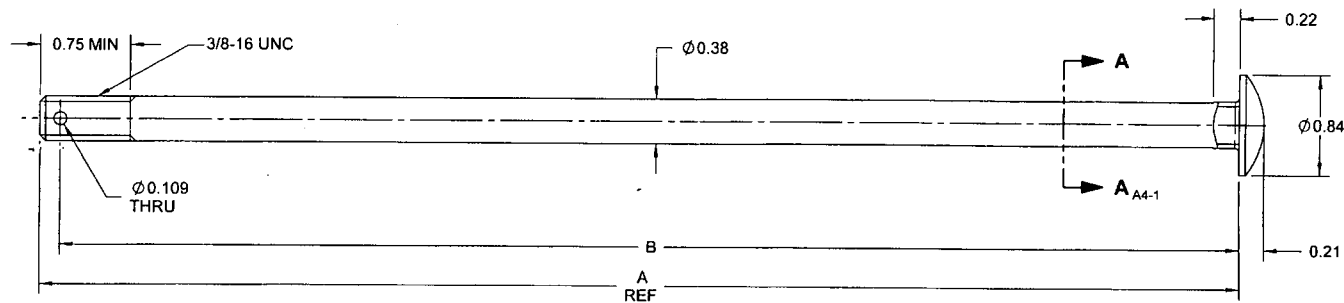
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & Initial all entries

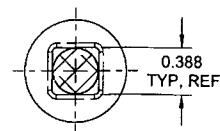


# SPECIFICATION CONTROL DRAWING



**D3977-X BOLT (CARRIAGE), UNC**

DART P/N	A	B	MATERIAL	WEIGHT (lbs)	SUPPLIER	SUPPLIER P/N
D3977-1	10.00	9.830	18-8 STAINLESS STEEL	0.34	McMASTER-CARR-	92356A662



**SECTION A-A** C3-1

**NOTES:**

- 1) MATERIAL: SEE TABLE
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: SEE TABLE

A NEW ISSUE		MB 09.07.13		
REV.		DESCRIPTION	BY DATE	
DESIGN	1	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA		
DRAWN				
CHECKED	JS		DRAWING NO.	REV. A
MFG. APPR.			D3977	SHEET 1 OF 1
APPROVED	AN		TITLE	SCALE
DE APPR.			<b>BOLT (CARRIAGE), UNC</b>	NTS
DATE	09.07.13		COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

#55180

RELEASE  
09/07/13

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & Initial all entries



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO11073

Purchase Order Date 1/08/10

PO Print Date 1/08/10

Page Number 1 of 1

Order From :

VU-MCM001

MCMaster-CARR SUPPLY CO,  
P.O. BOX 7690  
CHICAGO, IL 60680-7690  
US

**FAXED**  
6/10/10

Contact Name

Vendor Phone

Vendor Fax

Vendor Account Nbr

330 995 5500

330 995 9600

Buyer

Requisition Nbr

Tax Resale Nbr

Terms

Currency

FOB

Chantal Lavoie

10127-2607

Net 30

USD

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Ext
1		2584A91LEFT HAND TAP	1/12/10 Yes	1.00 Each	Purolator ground	\$69.3400	
2	92356A662	Bolt	1/12/10 Yes	20.00 Each	Purolator ground	\$5.3500	
3	91853A031	Nut	1/12/10 Yes	20.00 Each	Purolator ground	\$0.5500	

Special Inst: AS PER DWG D3977 REV. A  
B55180  
MCMaster P/N: 92356A662

Special Inst: AS PER DWG D3978 REV. A  
B55182  
MCMaster P/N: 91853A031

CERTIFICATE OF CONFORMITY  
REQ'D UPON DELIVERY

PO Total:

Change Nbr: 1

Change Date: 1/08/10

No substitution or deviation without  
consent.  
Certificate of Conformity or Mater  
Certification required when applica



200 Aurora Industrial Parkway  
Aurora OH 44202  
330-995-5500  
cle.sales@mcmaster.com

Dart Aerospace Ltd  
1270 Aberdeen St  
Hawkesbury ON K6A 1K7  
Canada

Purchase Order  
PO11073

McMaster-Carr Number  
5683739-02

Page 1 of 1

01/08/2010

A11

Line	Description	Ordered	Shipped
2	92356A662 18-8 Stainless Steel Round Head Square Neck Carriage Screw, 3/8-16 Thread, 10" Length, Packs of 1	20 Packs	+ 15
	Unit Price:	\$6.04	
	Extended Price:	\$90.60	
3	91853A031 18-8 Stainless Steel Slotted Hex Nut, Style B, 3/8"-16 Thread Size, 9/16" W, 13/32" Overall H, Packs of 1	20 Packs	20
	Unit Price:	\$3.06	
	Extended Price:	\$61.20	

2 - 716 - 07 24 - 02 A662 15PK One EA/PK 2

2 - 700 3

*S*  
*10/6/19*

Shipped separately from our Chicago warehouse on 01/08

1	2584A91 Left-Hand Thread High-Speed Steel Tap, Bottoming, 1-1/8"-7 NC, H4 Pitch Diameter, 4 Flute	1 Each	1
2	92356A662 18-8 Stainless Steel Round Head Square Neck Carriage Screw, 3/8-16 Thread, 10" Length	20 Packs	5

Charges for this shipment

Merchandise Amount: \$151.80  
Sales Tax: \$7.59  
Total: \$159.39

Dart Aerospace Ltd

Assembly  
Area

11

Cycle

43

Shelf

115

Documents

2

EXP

4 U  
2 lin

FW1WBP:  
01/08/201  
12:57/13:  
006



# McMASTER-CARR®

Purchase Order  
PO11073

Page 1 of 1

100 Aurora Industrial Parkway  
Aurora OH 44202  
330-995-5500  
e.sales@mcmaster.com

Dart Aerospace Ltd  
1270 Aberdeen St  
Hawkesbury ON K6A 1K7  
Canada

McMaster-Carr Number  
5683739-01

01/08/2010

A2

Line	Description	Ordered	Shipped
1	<b>2584A91</b> Left-Hand Thread High-Speed Steel Tap, Bottoming, 1-1/8"-7 NC, H4 Pitch Diameter, 4 Flute  Unit Price: \$77.66 Extended Price: \$77.66	1 Each	1
2	<b>92356A662</b> 18-8 Stainless Steel Round Head Square Neck Carriage Screw, 3/8-16 Thread, 10" Length, Packs of 1  Unit Price: \$6.04 Extended Price: \$30.20	20 Packs	5

1 - 302 - 14 **63 - 21** A91 **1 EA** 1

1 - 563 2

Shipped separately from our Cleveland warehouse on 01/08

2	<b>92356A662</b> 18-8 Stainless Steel Round Head Square Neck Carriage Screw, 3/8-16 Thread, 10" Length	20 Packs	15
3	<b>91853A031</b> 18-8 Stainless Steel Slotted Hex Nut, Style B, 3/8"-16 Thread Size, 9/16" W, 13/32" Overall H	20 Packs	20

## Charges for this shipment

Merchandise Amount:	\$107.86
Sales Tax:	\$5.39
<b>Total:</b>	<b>\$113.25</b>

Dart Aerospace Ltd

Assembly  
Area

2

Cycle

41

Shelf

211

Documents

2

SS-R-0707

18

EXP

2 lbs  
2 lines

EW1BSPA8  
01/08/2010  
12:57/13:35  
250

0100848617661





Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

\*\*\*PO REPRINT\*\*\*

Purchase Order ID PO11073

Purchase Order Date 1/08/10

PO Print Date 1/15/10

Page Number 1 of 1

Order From :

VU-MCM001

MCMaster-CARR SUPPLY CO,  
P.O. BOX 7690  
CHICAGO, IL 60680-7690  
US

Contact Name

Vendor Phone 330 995 5500

Vendor Fax 330 995 9600

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr 10127-2607

Terms

Net 30

Currency

USD

FOB

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req. Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1		2584A91LEFT HAND TAP	1/12/10 Yes	1.00 Each	Purolator ground	\$77.6600	\$77.66
Deliver To: CNC							
2	92356A662	Bolt	1/12/10 Yes	20.00 Each	Purolator ground	\$6.0400	\$120.80
		Special Inst:	AS PER DWG D3977 REV. A B55180 MCMaster P/N: 92356A662				
3	91853A031	Nut	1/12/10 Yes	20.00 Each	Purolator ground	\$3.0600	\$61.20
		Special Inst:	AS PER DWG D3978 REV. A B55182 MCMaster P/N: 91853A031				
PO Total:							\$259.66

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required when applicable

Change Nbr: 2

Change Date: 1/12/10

## Marc Bellavance

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** January 19, 2010 3:17 PM  
**To:** 'Marc Bellavance'  
**Cc:** 'Lacelle, Linda'  
**Subject:** RE: D3977-1 Bolt (re D412-761-049)

Marc,

For what this part is used for, I don't see a problem with this deviation.

David

---

**From:** Marc Bellavance [mailto:mbellavance@dartaero.com]  
**Sent:** Tuesday, January 19, 2010 6:42 AM  
**To:** 'David Shepherd'  
**Cc:** Lacelle, Linda  
**Subject:** D3977-1 Bolt (re D412-761-049)  
**Importance:** High

Good morning David,

I was asked by Production/QC to verify P/N D3977-1 against the drawing (attached).

The dimensions are all within tolerance at the exception of the shank diameter. Per drawing, the diameter must be  $\varnothing 0.38" \pm 0.03"$ . The measurements I took are  $\varnothing 0.370"$  (acceptable) and  $\varnothing 0.331"$  to  $\varnothing 0.340"$  (both under tolerance). I am just wondering if those would still be acceptable based on the fact that the loads will be distributed along the entire length of the shank rather than punctual. I have the impression that the inconsistencies are due to the manufacturing method as some seem forged while others seem casted.

Thanks in advance,

**Marc Bellavance**  
**Mechanical Designer/Technical Support**

***DART aerospace Ltd.***

Tel: 613-632-5200 Ext. 240

Fax: 613-632-9311

E-mail: [mbellavance@dartaero.com](mailto:mbellavance@dartaero.com)

Web: [www.dartaero.com](http://www.dartaero.com)



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No virus found in this incoming message.

Checked by AVG - [www.avg.com](http://www.avg.com)

Version: 8.5.432 / Virus Database: 270.14.150/2632 - Release Date: 01/19/10 07:34:00

**L Lacelle**

**From:** David Shepherd [dshepherd@dartaero.com]

**Sent:** January 19, 2010 3:17 PM

**To:** 'Marc Bellavance'

**Cc:** 'Lacelle, Linda'

**Subject:** RE: D3977-1 Bolt (re D412-761-049)

Marc,

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David

**From:** Marc Bellavance [mailto:mbellavance@dartaero.com]

**Sent:** Tuesday, January 19, 2010 6:42 AM

**To:** 'David Shepherd'

**Cc:** Lacelle, Linda

**Subject:** D3977-1 Bolt (re D412-761-049)

**Importance:** High

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Thanks in advance,

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**Mechanical Designer/Technical Support**

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E-mail: [mbellavance@dartaero.com](mailto:mbellavance@dartaero.com)

Web: [www.dartaero.com](http://www.dartaero.com)



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Version: 8.5.432 / Virus Database: 270.14.150/2632 - Release Date: 01/19/10 07:34:00

1/19/10



**L Lacelle**

**From:** Marc Bellavance [mbellavance@dartaero.com]  
**Sent:** January 19, 2010 8:42 AM  
**To:** 'David Shepherd'  
**Cc:** Lacelle, Linda  
**Subject:** D3977-1 Bolt (re D412-761-049)  
**Importance:** High  
**Attachments:** D3977-RevA.pdf

Good morning David,

I was asked by Production/QC to verify P/N D3977-1 against the drawing (attached).

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Thanks in advance,

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Web: [www.dartaero.com](http://www.dartaero.com)



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